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WHY FRUIT TREES FAIL TO BEAR

U.S. DEPARTMENT OF AGRICULTURE
Leaflet No. 172

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ECONOMIC ANALYSIS
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WHY FRUIT TREES FAIL TO BEAR

Your fruit tree normally will begin to bear fruit soon after it has become old enough to blossom freely. Nevertheless, the health of your tree and its environment, its fruiting habits, and the cultural practices you use, can influence its ability to produce fruit. Adequate pollination is also essential to fruit yield.

If just one of these conditions is unfavorable, yields may be reduced. Perhaps the tree will not bear fruit at all. As a grower, you can exercise some control over most of the factors contributing to fruit production.

BEARING AGE

When you purchase nursery-grown fruit trees, their tops will probably be from 1 to 2 years old. The length of time from planting to fruit bearing varies with the type of fruit. Trees that grow at a moderate rate generally bear fruit sooner than those that grow either too quickly or too slowly.

The age (from planting) when trees can be expected to bear fruit are as follows:

Variety	Time In Years
Apple	2 to 5
Apricot	2 to 5
Cherry, sour	3 to 5
Cherry, sweet	4 to 7
Citrus	3 to 5
Fig	2 to 3
Peach	2 to 4
Pear	4 to 6
Plum	3 to 6
Quince	5 to 6

Dwarf apple and dwarf pear trees usually begin to bear 1 to 2 years earlier than standard-size trees.

TREE HEALTH

Healthy trees produce good quality fruit. Weak or diseased trees produce fruit of poor quality or no fruit at all. The first step in fruit production is to keep your fruit trees healthy.

Two of the main problems involved are insects and diseases. Typical of diseases that attack and destroy leaves and young fruit on apple and pear trees is scab fungus. The fungus that causes brown rot kills blossoms on peach trees and plum trees.

Diseases, insects, and fungi can be controlled through application of spray mixtures recommended by your county agricultural agent or State experiment station. These spray mixtures of fungicides and insecticides are usually effective against most fruit tree pests. When fruit trees are not sprayed properly or left untreated, diseases and insects may restrict the size and quality of the yield, although the tree itself usually continues to bear fruit.

CLIMATE AND WEATHER

Most hardy fruit trees need a certain amount of cold winter weather to end their dormancy and to promote spring growth. When winters are too mild, spring growth is delayed, irregular, and slow. These factors extend the period of blooming, and thereby increase the possibility of frost injury.

Hardy fruit trees grown in climates considerably warmer than their native ones often bear poorly because of insufficient winter cold. This problem can occur in areas with mild climates such as southern California and within 200 miles of the Gulf of Mexico.

On the other hand, extreme cold during winter dormancy may kill the fruit buds. Winter weather rarely threatens hardy apple, pear, plum, and sour cherry varieties. Sweet cherry trees, however, are relatively sensitive to cold until they become dormant. Peach trees are very vulnerable to cold weather. Their buds can be killed by midwinter temperatures around $-10°$ F.

As the fruit buds grow and open, they become more susceptible to injury from frost. The exposed buds can usually withstand temperatures near 24°F. However, the open blossoms of practically all fruit trees may be killed if the temperature drops below 27° F.

When a heavy frost is expected, covering the trees will sometimes prevent bud or blossom injury, provided temperatures do not fall too low and the cold weather is of short duration. Protective covering may be effective, and such things as cheesecloth and old bed sheets may be used.

During spring frosts, some commercial growers heat their orchards, but this method is impractical for most home gardeners. After a severe frost, injured blossoms may appear normal, but if the pistils (center part of the blossoms) are killed, the tree will not bear fruit.

POLLINATION

Most fruit trees need to be pollinated. Without sufficient pollination, they may blossom abundantly, but will not bear fruit.

Some species of fruit trees have "perfect" flowers. Both the anthers, which contain pollen, and the pistils, which develop into fruit, are located in the same blossom. Trees that bear fruit through self-pollination, or set fruit without pollination, are called "self-fruitful."

However, there are many types of fruit with perfect flowers that can not produce fruit from their own pollen. These require pollen from another variety and are called "self unfruitful."

Some species of fruit trees do not fit conveniently into

either category. Persimmons and dates have male trees that produce pollen and female trees that produce fruit. To grow them successfully, it is necessary to plant at least one tree of each gender near each other.

Almost all citrus trees are "self fruitful." Other self fruitful types include quinces, sour cherries, apricots (except Perfection and Riland), figs (except the Smyrna type grown in California), peaches (except the J. H. Hale and several others), and European-type plums such as the Stanley, Green Gage, and Italian Prune.

"Self unfruitful" types include most apple, pear, sweet cherry, and Japanese and American plum trees. To pollinate adequately, plant two or more varieties near each other. Bees and other insects normally pollinate fruit trees. To insure an adequate supply of bees, furnish each acre with at least one colony. However, in small orchards surrounded by uncultivated land, enough resident pollinators may be present. The following planting practices are recommended:

Apple

Plant at least two varieties of apple trees near one another. Golden Delicious, a self fruitful type, is one of the few exceptions to this rule. Poor pollen-producing types, such as Baldwin, Gravenstein, Staymen, Winesap, and Rhode Island Greening, need to be planted with at least two other varieties to insure adequate pollination of all.

Sweet Cherry

Bing, Lambert, and Napoleon (Royal Ann) cherry trees do not pollinate one another. Plant a pollinating variety such as Black Tartarian, Republican, Van, or Windsor, or a sour cherry such as Montmorency nearby.

Pear

Many varieties of pears are completely or partially self unfruitful. For adequate pollination, plant at least two varieties together. Note: Bartlett and Seckel pears will not pollinate each other, and Magness can not be used as a pollinator.

Plum

Since most varieties of Japanese and American plums are self unfruitful, plant two or more varieties together.

BIENNIAL BEARING

Occasionally certain fruit trees, such as apples, bear heavily one year and sparsely the next. This is called "biennial bearing." The spring-flowering buds of most hardy fruit trees have actually been formed during the previous summer. Therefore, an especially heavy crop one year may prevent adequate bud formation for the following year.

Biennial bearing of apples is difficult to alter or correct. However, you can induce a return to normal yearly fruit production by early and heavy thinning during the year in which the trees are producing their large yield. About 30 to 40 healthy leaves are needed to produce good quality fruit. Within 30 days after bloom, thin to leave only 5 to 10 fruit per yard along the branches.

CULTURAL PRACTICES

Fruit trees need full sunlight for best production. Inadequate sunlight delays the beginning of fruit bearing and may reduce the amount of fruit. Avoid placing fruit trees where they will be shaded by buildings or by other trees.

Your trees will grow more vigorously and bear better if they have adequate space to develop their root systems. Do not plant them where roots of forest or shade trees will compete with them for the same soil. To reduce competition from weeds or grass, cultivate, mulch, or apply weed killer.

Prune young apple trees to develop a strong framework with a central leader and horizontal branches. Excessive upright growth will delay fruit bearing and reduce the quantity of fruit produced.

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For additional information on growing fruit trees or on controlling their insects and diseases, consult your county agricultural agent. You may also write to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Some helpful publications are:

L-407 "Dwarf Fruit Trees—Selection and Care"—available for 10 cents.

FB-1897 "Establishing and Managing Young Apple Orchards"—available for 25 cents.

Be sure to include your return address and ZIP code when ordering publications.

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Agricultural Research Service

Revised February 1971
Washington, D.C. Slightly revised March 1972

U. S. GOVERNMENT PRINTING OFFICE : 1973 O - 498 - 117

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